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CONTENTS

Practical Value of Examinations..... 141
Professional Training and Character..... 142

Book Notices:
The Ophthalmic Year Book, Volume 11..... 143

Index of Ophthalmology:
Diagnosis, Therapeutics 143
Operations, Refraction, Ocular Movements, Conjunctiva..... 144
Cornea and Sclera, Anterior Chamber and Pupil, Uveal Tract. 145
Sympathetic Disease, Glaucoma, Crystalline Lens, Retina..... 146
Optic Nerve, Visual Tracts and Centers, Color Vision..... 147
Eyeball, the Lacrimal Apparatus, Lids, Orbit, Parasites, Tumors, Injuries 148
Pathology, General Diseases, Comparative Ophthalmology, Hygiene 149
Ophthalmic Sociology and History..... 150

Abstracts From Foreign Journals:
Bacteriologic Findings From a Corneal Infiltrate..... 150
Ocular Pressure Under Intravenous Injections..... 150
Maturity of Cataract and After Cataract..... 150
Transitions From Normal Color Sense to Red-Green Blindness 151
Ocular Pulse and Pressure..... 152
Incongruence in Hemianopic Visual Fields..... 152
Lesions of Macula Four Years After Trauma..... 153
Optochin in External Eye Diseases..... 154
Symmetric Degeneration of Cornea; Deposits of Uric Acid.... 154
Experimental Chorio-retinal Atrophy and Cataract..... 155

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Ophthalmic Literature

VOL. V. NOVEMBER, 1915. NO. 11.

Edited by EDWARD JACKSON. Assisted by WILLIAM H. CRISP.

PRACTICAL VALUE OF EXAMINATIONS.

The word examination, derived from "examen," the index, or tongue, of a balance, signifies the weighing of evidence that might imply the highest value and reliability in such a test. But examinations to test the fitness of candidates are associated historically, and in most of our experience, with testing of verbal memory and book learning. Such was the object of the Chinese Civil Service tests and of the examinations of the European universities in the Middle Ages and the grammar or high school examinations of youth. Based upon such examinations there exists a good deal of skepticism as to the value of examinations in testing fitness for medical practice in general, and the same skepticism arises when it is proposed to resort to examinations to ascertain the preparedness of graduates in medicine for ophthalmic practice.

It is very true that examinations have been largely directed to ascertaining a candidate's ability to remember and use words, and that such ability is something very different from fitness for ophthalmic practice. It is quite true that examinations can be given, and have been given, in which the recent student actively "crammed" for the test, although he is quite incompetent for medical practice, makes a better showing than the thoroughly competent, experienced medical practitioner. But that such examinations are possible, or have been, is very far from proving that they are the only kind possible, or that they need to be repeated or perpetuated. A recent writer points out that medical examinations may reach a very close approximation to the tests for actual practice; and where carefully worked out they have done so, as the crammed student has found to his sorrow.

Even the written examination which seems to afford the ideal opportunities for "cramming" can be so modified as to make it an important test of real fitness for practice by wisely framed questions. Let us contrast the kind of question that favors the crammed student with one that tests the real ability to focus acquired knowledge on a practical condition.

A question like this may be asked: "Describe iritis, its causes, symptoms, diagnosis, complications and treatment." This is simply a request to quote from memory a chapter from his text-book, or so much thereof as possible. The suggestions about causes and symptoms, etc., are simply so many additional promptings that make it easier to keep the text-book arrangement of ideas.

But let such a question as this be propounded: "A man of 50 complains of inflammation, pain in his eye and impaired sight. Name three conditions that may cause it, the symptoms and tests by which these can be distinguished, and the prognosis and appropriate treat-

ment for each condition." The candidate may know by rote chapters on iritis, glaucoma and keratitis, and still fail to compound a satisfactory answer. He must be able to focus his knowledge on a concrete problem before him, he must weigh, select and adapt from his store of knowledge; in short, he must exercise the real office of a physician to answer such a question creditably.

With the **oral examination** much depends on the skill of the examiner. The previously prepared question should serve only to open the examination. By following up the opening question by a close cross-examination of the response to it, the candidate can quickly be made to reveal what sort of a store-house of knowledge he has to draw upon, and how skilful he is in choosing the pertinent facts.

When the examinee is set down for **practical examination** of a slide under the microscope, to pass judgment on the pathologic picture it presents, the conditions are exactly those under which the expert pathologist is expected to give an opinion. Indeed, this kind of an examination can easily be made unreasonably severe, and demands made that even the expert could not fully satisfy.

Equally searching is the **clinical examination** in which the candidate is assigned a patient to be carefully studied, reported upon and treated. Here both his methods of actual clinical working and the accuracy of their results are tested. Such an examination is an actual sample of practical work; and, so far as it is possible for one human being to pass judgment upon another, this furnishes the best basis to be expected.

The examination in ophthalmology, if it combine carefully framed questions for the written examinations, close cross-questioning in the oral quiz, practical reports on microscopic or other specimens, the working out of practical problems in refraction and the actual diagnosis of ocular disease, can have great practical value; in stimulating the candidate to pursue the needed course of study to prepare for it, and to indicate to the profession that he has made reasonable preparation for ophthalmic practice.

PROFESSIONAL TRAINING AND CHARACTER.

Important as professional training may be, it cannot take the place of character. Indeed, professional skill, without the sense of responsibility or conscience, becomes a menace rather than a help to the community. The expert penman becomes the dangerous forger. The young man educated in a medical school may become the chief worker in the quack medical institute.

Yet it is very rarely that the thoroughly well-educated young man, who knows himself fully prepared for the practice of his profession, will desert the high road to professional success for the supposed more speedy rewards of quackery. There probably is no better guarantee that a man will meet squarely the obligations of professional life than his similar attitude toward his obligations as a student.

To know all that one's professional rivals can know of a case removes most of the inducement to pretense. To understand the limits

of what it is possible to do for a patient makes any rash promises foolish. The career of the quack offers little that is attractive to the scientifically trained medical man. A broadly trained ophthalmologist is not likely to become an advertising optometrist. Even fads have little charm for one whose education has been well rounded.

While some innate defect of moral constitution may make its influence felt in spite of any training; there can be no doubt that thoroughly scientific training tends to develop professional character. It cannot be claimed that any course of training or any form of examination will enable us to develop or guarantee a high grade of professional character. But the endeavor to ensure the proper scientific education of ophthalmologists will exert an influence in the right direction.

BOOK NOTICES.

The Ophthalmic Year Book, Volume XI. Containing a digest of the literature for the year 1914, edited by Edward Jackson, assisted by Theodore B. Schneideman, William Zentmayer, W. H. Crisp, Casey A. Wood, Wendell Reber, H. S. Gradle, Robert Henry Elliot, H. W. Aufmwasser, Meyer Wiener, Will Walter, Florence Mayo Schneideman, Nelson M. Black, Charles Zimmermann and Thomas B. Holloway. 8vo, 545 pages, illustrated. 1915. The Herrick Book and Stationery Co., Denver, Colorado. Price, $10.

That this is the largest volume of its series is rather ominous, in view of the fact that the literature of 1914 reviewed in it was slightly less in amount, and not more important than that of preceding years. There seems to be a fixed tendency in this direction. With a single exception each volume so far has been larger than its predecessors. Something might be pleaded in extenuation of the increased size, on account of more thorough investigation of the year's literature than has been possible in preceding years. This plea might rest on the larger number of collaborators now engaged in the preparation of the book.

But it is to be feared that among the larger number of workers now engaged in the undertaking may be some who do not feel keenly enough the necessity of keeping their particular portions of the work within rigid limits. Unless all who write for the Year Book can be kept conscious of the need to restrict its size, so that it will remain a convenient collection of reference volumes, adapted to the needs of the mass of the profession, there is danger that it may outgrow its greatest usefulness. While it is of value to the special student to find mentioned here every paper he may wish to trace, the practicing ophthalmologist wants the really important advances that interest him made as accessible as possible by the exclusion of all that will not be useful to him.

Index of Ophthalmology

DIAGNOSIS.

Kunz, L., and Ohm, J. Photographic Measurements of Position of Eyes and Pupils. (4 ill.) Graefe's Arch. f. Ophth., v. 89, p. 468.

Steinbugler, W. F. C. Eye in Diagnosis. New York Med. Jour., v. 102, p. 897.

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Heard, T. H. How Eye-strain May Cause Headaches. St. Paul Med. Jour., v. 17, p. 742.

Lauber, H. Accommodation Lenses. (2 ill.) Graefe's Arch. f. Ophth., v. 89, p. 401.

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Von Rohr, M. Development of Telescopic Spectacles. Zeit. f. Ophth., Optik., etc., v. 3, p. 1.

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Zimmermann, C. Sudden Changes of Refraction in Diabetes. Wis. Med. Jour., v. 14, p. 227.

OCULAR MOVEMENTS.

Chance, B. Capsular Advancement. Wills Hosp. Ophth. Soc., May 4. Ophth. Rec., v. 24, p. 591. Ann. of Ophth., v. 24, p. 830, 834.

De Kleijn, A. Ocular Muscles Reflex and the Ear. Nederl. Tijdschr., v. Geneesk., 1915, p. 1835. Arch. d'Opht., v. 34, p. 780.

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Groethysen, G. Cyclical Third Nerve Paralysis. (2 ill.) Arch. of Ophth., v. 44, p. 666.

Johnson, A. E. Convergent Strabismus. Jour.-Lancet, v. 35, p. 631.

Loring, M. Investigations of Law of Eye Movements. Psychol. Rev., v. 22, p. 354.

Marlow, F. W. Determination of the Relative Position of Rest by Prolonged Occlusion of One Eye. New York St. Jour. Med., v. 15, p. 429.

Ohm, J. Miner's Nystagmus. (Bibl.) Graefe's Arch. f. Ophth., v. 89, p. 505.

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Wilson, J. A. Nystagmus and Allied Conditions. Lancet, Oct. 23, p. 913.

Zentmayer, W. Esotropia. Wills Hosp. Ophth. Soc., May 4. Ann. of Ophth., v. 24, p. 830.

CONJUNCTIVA.

Beals, M. B. Trachoma and Follicular Conjunctivitis. New York Med. Jour., v. 102, p. 1003.

Blue, R. Gram Negative Diplococci in Conjunctival Sac. Arch. of Ophth., v. 44, p. 652.

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Maxwell, E. M. Lymphangioma of Conjunctiva. Brit. Jour. Child. Dis., v. 12, p. 335.

O'Connor, F. J. Trachoma—A Public Health Problem. Jour. Tenn. State Med. Assn., v. 8, p. 316.

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Repeated Titles. **Leoz Ortin** (5, p. 85) Ann. of Ophth., v. 24, p. 778. **Ticho** (5, p. 114) Ophth. Lit., v. 5, p. 140.

CORNEA AND SCLERA.

Chance, B. Herpes Zoster Ophthalmicus. Ann. of Ophth., v. 24, p. 693.

Freise, E., Goldschmidt, M., and Frank, A. Keratomalacia. Monatsschrift f. Kinderheilkunde, v. 13, No. 9. Jour. Amer. Med. Assn., v. 65, p. 1764.

Golesceanu, C. Prognosis of Vision After Interstitial Keratitis. Clin. Opht., v. 20, p. 695.

Hanke, V. Regeneration of Corneal Tissue and True Nature of Karatoblasts. (3 pl.) Graefe's Arch. f. Ophth., v. 89, p. 350.

Kinnier, L. Recurrent Corneal Ulcers. Jour. Iowa State Med. Soc., v. 5, p. 478.

Lane, F. Peripheral Annular Infiltrate of Cornea After Scleral Incision. (4 ill.) Ann. of Ophth., v. 24, pp. 619, 793.

Salzer, F. Comparative Anatomic Studies of Regeneration and Wound Healing in Cornea. (12 ill., 1 pl., Bibl.) Arch. f. Augenh., v. 79, p. 61.

Thompson, M. H. Parenchymatous Keratitis. Colo. Ophth. Soc., May 22. Ophth. Rec., v. 24, p. 594.

Repeated Titles. **Behr** (3, p. 150) Ann. of Ophth., v. 24, p. 771. **Löwenstein** (3, p. 150) Ann. of Ophth., v. 24, p. 772. **Leoz Ortin** (5, p. 96) Ann. of Ophth., v. 24, p. 779. **Leoz Ortin** (5, p. 96) Ann. of Ophth., v. 24, p. 782. **Stölting** (3, p. 150) Ann. of Ophth., v. 24, p. 773. **Streiff** (3, p. 150) Ann. of Ophth., v. 24, p. 772. **Von Hippel** (3, p. 150) Ann. of Ophth., v. 24, p. 771. **Waardenberg** (5, p. 56) Arch. d'Opht., v. 34, p. 779.

ANTERIOR CHAMBER AND PUPIL.

Bergl, K. Bilateral Reflex Fixity of Pupil After Skull Injury From Grenade. Deut. Med. Woch., v. 41, p. 1161.

Pupillary Reaction to Epinephrin. Jour. Amer. Med. Assn., v. 64, p. 1915.

Rice, P. Simplified Operation for Making Artificial Pupil in Seclusio Pupillae. Jour. Ophth., Otol. and Laryngol., Nov., p. 950.

Stanculeanu, G. Cell Chemistry of Aqueous Humor and Influence of Subconjunctival Injections. Clin. Opht., v. 20, p. 687.

Repeated Titles. **Calderaro** (5, p. 70) Ann. of Ophth., v. 24, p. 785.

UVEAL TRACT.

Attlee, J. Coloboma of Iris in Mother and Child. Roy. Soc. Med., Sec. on Ophth., June 9. Arch. of Ophth., v. 44, p. 670.

Bordley, J., Jr. Malignant Uveitis Treated With Thyroid Extract. (1 ill., 5 charts.) Arch. of Ophth., v. 44, p. 638.

Finnoff, W. C. The Ciliary Glands. (3 pl.) Arch. of Opht., v. 44, p. 626.

Pattee, J. A. Old Choroiditis. Colo. Ophth. Soc., May 22. Ophth. Rec., v. 24, p. 575.

Reber, W. Iritis Due to Influenza. Ophth. Rec., v. 24, p. 559.

Reitsch, W. Acquired Ectropium Uveae. (1 pl.) Arch. f. Augenh., v. 79, p. 107.

Van der Breggen, F. A. Family Anomalies of Iris. Nederl. Tijdschr. v. Geneesk, 1915, p. 1874. Arch. d'Opht., v. 34, p. 780.

Woods, H. Ocular Phenomena in Three Cases of Gastro-intestinal Disorder. (11 fig.) Ophth. Rec., v. 24, p. 547.

Repeated Titles. **Oliverès** (5, p. 97) Ann. of Ophth., v. 24, p. 781. **Speciale-Cirincione** (5, p. 70) Ann. of Ophth., v. 24, p. 787.

SYMPATHETIC DISEASE.

Hudson, A. C. Sympathetic Ophthalmia Treated by Salvarsan and Neo-salvarsan. Roy. Soc. Med., Sec. on Ophth., June 9. Arch. of Ophth., v. 44, p. 671.

Meller, J. Sympathetic Inflammation Without Disease of Second Eye. Graefe's Arch. f. Ophth., v. 89, p. 427.

History of Sympathetic Ophthalmia. Graefe's Arch. f. Ophth., v. 89, p. 437.

Pearson, W. W. Sympathetic Ophthalmia. (2 ill.) Jour. Iowa State Med. Soc., v. 5, p. 421.

Repeated Titles. **Jampolsky** (5, p. 7) Ann. of Ophth., v. 24, p. 775.

GLAUCOMA.

Barkan, H. Postoperative Detachment of Choroid; Special Reference to Elliot's Operation for Glaucoma. Jour. Amer. Med. Assn., v. 65, p. 1520. Sec. on Ophth., 1915, p. 209.

Brawley, F. Seton Operation for Glaucoma. Chicago Ophth. Soc., May 17. Ophth. Rec., v. 24, p. 586. Ann. of Ophth., v. 24, p. 802.

Butler, T. H. Sclerotomy With Especial Reference to Danger From Late Infection. Arch. of Ophth., v. 44, p. 611.

Heerfordt, C. F. Venous Stasis and the Fistula Operations for Glaucoma. (1 ill.) Graefe's Arch. f. Ophth., v. 89, p. 484.

Lamb, R. S. Is Migraine a Forerunner of Glaucoma? Ann. of Ophth., v. 24, pp. 683, 800.

Ricca, S. Action on Intraocular Tension. Rassegna di Clin e Terap., v. 14, p. 157.

Repeated Titles. **Elliot** (5, p. 133) Ophth., Rev., v. 34, p. 330.

CRYSTALLINE LENS.

Adams, E. Congenital Aphakia With Micro-cornea. (1 ill.) Ophth. Rec., v. 24, p. 581.

Corry, M. Shanker's Operation for Cataract. Lancet, Nov. 13, p. 1108.

Fearnsides, E. G. Myopathy and Cataract. Rev. Neurol. and Psychiat., July. Lancet, Oct. 30, p. 985.

Fisher, W. A. Fifty Consecutive Intracapsular Cataract Operations. Ann. of Ophth., v. 24, p. 718.

Green, A. S., and **Green, L. D.** Operation for Secondary Cataract. (1 ill.) Ophth. Rec., v. 24, p. 580.

Schanz, F. Origin of Hyperopia and Senile Cataract. Graefe's Arch. f. Ophth., v. 89, p. 556.

Sherer, J. W. Congenital Aphakia. Jour. Mo. St. Med. Assn., v. 12, p. 478.

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Thompson, M. H. Posterior Polar Cataract in Right Eye. Subluxation of Traumatic Cataract in Left Eye. Colo. Ophth. Soc., May 22. Ophth. Rec., v. 24, p. 593.

Watts, H. A. Intracapsular Operation for Cataract. Jour. Ophth., Otol. and Laryngol., Nov., p. 944.

Repeated Titles. **Ask** (3, p. 151) Ann. of Ophth., v. 24, p. 774. **Ribas Valero** (5, p. 98) Ann. of Ophth., v. 24, p. 781.

RETINA.

Fisher, J. H. Retinitis of Pregnancy. Roy. Soc. Med., Sec. on Ophth., June 9. Arch. of Ophth., v. 44, p. 670. Ophth. Rec., v. 24, p. 583.

Guzmann, E. Histology of Diffused Gliosis of Retina. (1 ill., 1 pl.) Graefe's Arch. f. Ophth., v. 89, p. 323.

Hosford, J. S. Albuminuric Retinitis of Pregnancy. Roy. Soc. Med., Sec. on Ophth., June 9. Arch. of Ophth., v. 44, p. 671.

Hunter, W. S. Retinal Factors in Visual After Movement. Psychol. Rev., v. 22, p. 479.

Otori, K. Experimental Primary Retinal Tuberculosis. Arch. f. Augenh., v. 79, p. 44.

Pattee, J. A. Retinal Detachment. Colo. Ophth. Soc., May 22. Ophth. Rec., v. 24, p. 594.

Rockliffe, W. C. Retinitis Occurring in Pregnancy. Roy. Soc. Med., Sec. on Ophth., June 9. Arch. of Ophth., v. 44, p. 672.

Thompson, M. H. Choroido-retinitis. Colo. Ophth. Soc., May 22. Ophth. Rec., v. 24, p. 593.

Van Geuns, J. R. Exudative Retinitis (1 ill., 1 pl.) Graefe's Arch. f. Ophth., v. 89, p. 445.

Repeated Titles. **Holth** (5, p. 87) Ann. of Ophth., v. 24, p. 790. **Schiötz** (5, p. 58) Ann. of Ophth., v. 24, p. 790.

OPTIC NERVE.

Behr, C. Parenchymatous Lymph Currents in Optic Nerve and Retina. (1 pl.) Graefe's Arch. f. Ophth., v. 89, p. 265.

Duhot. Optic Neuritis and Polyneuritis After Hemorrhage. Arch. d'Opht., v. 34, p. 782.

Finch, G. Optic Neuritis Following on "Gassing." Lancet, Nov. 8, p. 1026.

Pattee, J. A. Optic Atrophy. Colo. Ophth. Soc., May 22. Ophth. Rec., v. 24, p. 595.

Wray, C. Bony Growth in Frontal Sinus. Roy. Soc. Med., Sec. on Ophth., June 9. Arch. of Ophth., v. 44, p. 670.

Repeated Titles. **Ten Doesschate** and **De Kleijn** (5, p. 73) Arch. d'Opht., v. 34, p. 780.

VISUAL TRACTS AND CENTERS.

Bramwell, B. Lesions of Occipital Lobe and Affection of Vision. (12 ill.) Edinb. Med. Jour., v. 15, p. 165.

Brown, W. Practice in Grading and Identifying Shades of Gray. Psychol. Rev., v. 22, p. 519.

Climenko, H. Ocular Signs of Tumor of Occipital Lobe. Med. Rec., v. 88, p. 807.

Dunlap, K. Shortest Perceptible Time Interval Between Two Flashes of Light. Psychol. Rev., v. 22, p. 226.

New Measure of Visual Discrimination. Psychol. Rev., v. 22, p. 28.

Gradle, H. S. The Blind Spot. (Bibl.) Ann. of Ophth., v. 24, pp. 637, 796.

Lewis, F. P. Conscious Vision in Development of Amblyopic Eye. Ann. of Ophth., v. 24, pp. 675, 798.

Lohmann, W. Binocular Summation of Stimulus Study in Light Thresholds. (Bibl.) Arch. f. Augenh., v. 79, p. 110.

Veasey, C. A. Cerebral Localization From an Ophthalmic Standpoint. (5 ill.) Northwest Med., v. 5, p. 29.

Von der Nienburg, B. Apparent Rate of Light Succession as Compared With Sound Succession. Psychol. Rev., v. 22, p. 56.

Woodruff, F. E. Complete Left Lateral Hemianopsia With Glycosuria as Result of Slight Trauma. (Bibl.) Ann. of Ophth., v. 24, pp. 662, 797.

COLOR VISION.

Black, N. M. Examination of Vision and Color Perception in Army, Navy and Railway Service. 88 pp. Ill. Reprint from Amer. Encyclopedia of Ophth. Cleveland Press, Chicago, 1915.

Brown, W. Practice in Associating Color Names With Colors. Psychol. Rev., v. 22, p. 45.

Usher-Somers, N. L. Chromatophoria. Med. Times, London, v. 43, p. 456.

EYEBALL.

Cecchetto, E. Metastatic Ophthalmia. Fracastoro, Verona, v. 11, p. 105.

Dighton, A. Metastatic Ophthalmia Following Mastoid Operation. Liverpool Med. Chir. Jour., v. 35, p. 315.

Gamble, W. E. Albinism in Man, Special Reference to Eye. (Bibl.) Ann. of Ophth., v. 24, pp. 627, 794.

Schenck, C. P. Microphthalmus and Anophthalmus. Texas Med. News, v. 24, p. 761.

Zentmayer, W. Bilateral Violent Panophthalmitis, Two Cases. Wills Hosp. Ophth. Soc., May 4. Ann. of Ophth., v. 24, p. 830. Ophth. Rec., v. 24, p. 588.

Repeated Titles. **De Vries** (5, p. 135) Arch. d'Opht., v. 34, p. 780.

THE LACRIMAL APPARATUS.

Nordenson, J. W. Acute Dacryoadenitis. Arch. d'Opht., v. 34, p. 759.

Washburn, J. L. Tumors of Lacrimal Gland. Ohio State Med. Jour., v. 11, p. 693.

LIDS.

Chance, B. Herpes Zoster Ophthalmicus. Ann. of Ophth., v. 24, p. 693.

Dmitrieff, A. G. Hard Chancre of Lids. Russky Vrach, v. 14, No. 33.

Hawley, C. W. Symblepharon. Chicago Ophth. Soc., May 17. Ophth. Rec., v. 24, p. 586. Ann. of Ophth., v. 24, p. 802.

Menage, H. E. Cutaneous Blastomycosis. New Orleans Med. and Surg. Jour., v. 68, p. 299.

Repeated Titles. **Eppenstein** (4, p. 107) Ann. of Ophth., v. 24, p. 771.

ORBIT.

Brawley, F. Mucocele of Frontal Sinus. Chicago Ophth. Soc., May 17, Ophth. Rec., v. 24, p. 586.

Pagenstecher, A. H. Implantation After Enucleation. Remarks on Resection of Optic Nerve. Arch. f. Augenh., v. 79, p. 99.

Popoff, N. M. Ocular Signs of Exophthalmic Goitre. Russky Vrach, v. 14, No. 33. Jour. Amer. Med. Assn., v. 65, p. 1593.

Posey, W. C. Operation for Restoration of Socket. Wills Hosp. Ophth. Soc., May 4. Ophth. Rec., v. 24, p. 591. Ann. of Ophth., v. 24, p. 833.

Repeated Titles. **Fenton** (5, p. 135) Jour. Amer. Med. Assn., v. 65, p. 1583.

PARASITES.

Repeated Titles. **Menacho** (5, p. 102) Ann. of Ophth., v. 24, p. 782.

TUMORS.

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Fuchs, A. Bacteriologic Finding in a Corneal Infiltrate. (Archiv für Augenheilkunde, v. 78, p. 139.)

The patient's cornea was scratched with a straw. There developed at the center of the cornea a snow-white, sharply limited infiltrate lying in the supeficial layers of the cornea, and accompanied by a very slight epithelial defect. Symptoms of irritation were almost absent. The course of the condition was very chronic, and there was no tendency to extension. The infiltrate was surrounded by a halo of deeper opacity. Final healing left a transparent central area surrounded by a ring of opacity. The morphological and cultural characteristics of the organism found in the infiltrates are fully described. It closely resembled the hay bacillus, but differed from it in some important particulars. The author proposes for it the name Bacillus foeni.

Haupt, W. Behavior of the Ocular Pressure Under Intravenous Injection of Solutions of Common Salt. (Archiv für Augenheilkunde, v. 78, p. 359.)

From preliminary experiments on thirty rabbits, it appears at least probable that in the effect upon the ocular pressure of hypertonic or hypotonic injections not only osmotic, but also vasomotor, influences come into play. But above all Haupt's experiments are said to indicate that in all investigations as to ocular pressure not only blood pressure, but also the distribution of the blood in the body, must be taken into account.

Heyl, T. Statistics of Cataract Operations With Special Reference to the Relations Between Maturity of Cataract and Frequency of After-cataract. (Archiv für Augenheilkunde, v. 78, p. 239.)

By many operators less attention is paid now than formerly to the maturity of a cataract or the degree of opacity of the lens in determining the indications for or against cataract operation. Heyl's

study of the question is based upon 200 cases operated on in the Hess clinic at Munich. Traumatic cataract, lamellar cataract requiring evacuation, and complicated cases of cataract in which the prospects of appreciable success were minimal, were excluded from consideration. Stress is laid upon the fact that the operations were done according to Hess' technique. The lens capsule was opened as extensively as possible with Hess' specially curved capsule forceps, and the cortical remains or nuclear fragments were removed from the anterior chamber by the use of Hess' scoop in the chamber and gentle stroking of the outside of the cornea with the Daviel spoon. The variable percentage of operations for after-cataract in the practice of different operators is reviewed.

In the series of 200 cases under consideration, the percentage of non-complicated cases requiring operation for after-cataract was 9.3. As regards the various forms of cataract, the cases of complete senile cataract showed 9.3 per cent of after-cataract and the incomplete senile cataracts 8.3 per cent. Considered from the point of view of opacity of the lens cortex, 100 cases of complete opacity of the cortex gave ten operations for after-cataract, while ninety-two cases of incomplete opacity of the cortex gave eight operations for after-cataract. From both comparisons it appears that, contrary to the general opinion, cataracts with incomplete opacity of the lens or with the cortex still clear, using Hess' method of extraction, do not call for secondary operation more but somewhat less frequently than those cataracts which in the clinical sense are mature. Of further interest in this connection is the fact that in 48 out of 100 cataracts with complete opacity a good deal of cortical substance had to be removed with the scoop, while in only 10 out of 92 cases with partial opacity of the lens did considerable quantities of cortex have to be removed, the relative percentages being thus 48 and 10.8.

Köllner, H. Transitions Between Normal Color Sense and Congenital Red-green Blindness, and the Possibility of Their Quantitative Estimation. (Archiv für Augenheilkunde, Vol. 78, p. 302.)

The paper states the results of a series of studies of individuals. In congenital defects of color sense the estimation of threshold values with regard to the recognition of colored objects is of value only for purposes of orientation. It can not be made the basis of a numerical estimation of reduction in color sense, as with it the only thing tested is judgment as to one color. The application of comparison between colorless lights and colors with measurable degrees of saturation, for the quantitative estimation of the ability to distinguish colors, is also unsuccessful; since observers with demonstrable marked reduction of color sense are unable to perceive the resemblances, as a result of pronounced red-green contrast sensation.

In consequence of the peculiar complicated mode of vision of those with weak color vision, we have so far no serviceable method for numerical estimation of congenital reductions of the ability to distinguish colors. With the help of the so-called Rayleigh matching, on the other hand (for example with the anomaloscope), it is possible to discover numerous intermediate forms, in almost continuous transition, between the vision of normal persons and that of red-green blind persons, who experience both red-yellow and green-yellow resemblance. In this connection it is necessary to examine for all the relative mixtures of red and green in which, after equalizing any possible differences of illumination of the fields, resemblances are perceived.

Definitely continuous transitions exist between protanomalous and protanopic persons, and also between deuteranomalous and deuteranopic. These are shown in increasing broadening (Verbreiterung) of the relative mixtures of red and green still accepted as resembling.

On the other hand, the author has been unable so far to demonstrate continuous transitions such as were hitherto generally regarded as existing, between the matching done by these anomalous individuals and the normal.

The frequency of all departures from normal "Rayleigh matching" probably greatly exceeds 10 per cent of men. Exact statistical investigations of this matter are so far lacking. Only a proportion of all these forms is to be judged incompetent in the matter of color vision. This proportion, the extent of which must be determined by comparative studies of a great amount of material, may be at present estimated at from 9 to 10 per cent.

"Rayleigh matching," properly used, affords a very reliable and sure method for the recognition of departures from normal color sense. Only it must be kept in mind that by this method many more departures from the normal can be determined than should be distinguished as color blind for practical purposes.

Wessely, K. Contributions to the Study of Ocular Pressure. I. The Curve of the Ocular Pulse. II. The Dependence of the Ocular Pressure Upon Blood Pressure, Upon Vasomotor Influences and Upon the Distribution of the Blood in the Body. (Archiv für Augenheilkunde, Vol. 78, p. 247.)

As regards the curve of the ocular pulse, Wessely finds that when the arterial pulse is normal, the ocular pulse presents simple wave-shaped elevations, with no trace of secondary elevations; that arrhythmias of the heart beat find expression also in the curve of the ocular pulse; and that the catacrotic elevations are not perceptible in the ocular pulse until the arterial pulse reaches an abnormally high elevation.

As regards the dependence of ocular pressure upon other conditions, Wessely was able with the help of simultaneous graphic registration of both blood and ocular pressure to demonstrate that there are medicaments which so dilate the intraocular vessels as to produce a rise of ocular tension, even in the presence of falling blood pressure. Of this type are amyl nitrite, antipyrin and caffein. While on the one hand we may gather from this fact the need for a certain caution in the use of substances of this group, and generally of drugs which cause peripheral vasodilatation, when glaucoma is either present or threatened these experiments further suggest the significance of changes in caliber of intraocular vessels as regards the height of the intraocular pressure. For not only to the vasomotor changes produced by drugs, but to all such changes in the dilatation of the ocular vessels, not excluding the constant variations in the distribution of the blood in the organism, must such an effect be attributed. All these factors have—together with the blood pressure—the most important bearing upon the height of the ocular pressure, and they must therefore receive the closest attention, not only in the physiology of intraocular pressure, but also in the pathogenesis and therapy of glaucoma.

Rönne, H. Incongruence and Asymmetry in the Homonymous Hemianopic Visual Field. (Klinische Monatsblätter für Augenheilkunde, 54th year, p. 399.)

It is generally assumed that corresponding points of the retina have in common central points in the occipital cortex, and the clinical phenomena generally agree very well with this assumption. Rönne, however, points out that incongruence is possible and that it is a matter of theoretical and practical interest to know to what extent such incongruence may be expected to occur. He refers briefly to a number of arrangements which incongruence may take, and illustrates some of these arrangements by a series of eight personal

cases. A certain form of incongruence appears in the familiar fact that the temporal visual field is much greater in extent than the nasal. In one case cited, a girdle-shaped defect in the lower temporal quadrant of the right eye formed an island at the extreme periphery of the field with which there was no correspondence in the nasal field of the left eye. Best has cited a case of traumatic tract hemianopsia, in which the border lines between the hemianopic halves of the visual fields diverged upwards.

Wilbrand assumes that the perception center in the cortex occasionally has an irregular and incomplete mixing of the fascicular field, and that this occurrence of incomplete organization of the center in the individual is the cause of the incongruence. Rönne describes from his own series six cases which showed the pronounced incongruence. In the first four there were absolute or relative defects in hemiamblyopic visual fields, with regard to which it must be supposed that the margin of the defect was very uncertainly defined, so that a very slight change in the conditions of examination might lead to striking displacement of the boundary. In Rönne's seventh case the defect of one eye ran over to the right side of the median line, while in the other eye only a very slight incongruence was demonstrable. In this connection Rönne recalls that the "sparing" of the macula sometimes observed in hemianopsia may exist in one eye only, although usually the "sparing" is quite congruent. On the other hand, it is quite common to encounter a marginal zone or ring which has a very different development on the two sides. It thus appears that individual incongruence may exist in the mixing of the fascicular field.

Other circumstances, for example, paradoxic diplopia after squint operations, show that binocular vision may, to some extent, develop without the corresponding retinal elements having a common fascicular field. The irregularities definitely found all appear to be quite small, and to belong to the boundary line between the two halves of the visual field. One cannot, however, exclude the possibility that larger irregularities may be found at the periphery, but probably they are very rare and have much less significance than that attributed to them by Wilbrand. The mixing of the fascicles is in the large majority of cases extremely regular.

Scimemi, E. Lesions of Macula Lutea Encountered Four Years After a Traumatism. (La Clinica Oculistica, 15th year, p. 265.)

A workman received a violent blow in the right eye from a piece of wood which he had struck with his pick. There were two corneal wounds, which healed in a few days. But the vision fell considerably, although examination of the fundus of the eye did not reveal the cause of this. In the course of the next two and a half years repeated examinations of the fundus were made by three distinct oculists, of whom two were professors in a university clinic, but the only change discovered was a slight pallor of the disc associated with moderate contraction of the visual field. The patient was next seen four years after the injury.

About a half disc-diameter above the disc, a slight nebula covered the artery for a short distance and was surrounded by an area somewhat deficient in pigment. Below the disc, almost symmetrically with this nebula, was an area lightly and irregularly sprinkled with very fine pigment granules. The macular region had lost its ordinary deep color and had a color lighter than that of the rest of the fundus, and for an extent of about a disc diameter presented spots and striae of grayish-yellow color, and which imparted a marbled aspect to the macular region. Here and there were seen sparse pigment granules. No new-formed tissue or cicatricial striae were seen, nor glistening white patches. The visual field was uniformly contracted. The vision

with correcting lens was 1/50. The author remarks that this case, which formed the subject of a medicolegal judgment, shows that the oculist should be very cautious in the prognosis of ocular traumatisms, even when the ophthalmoscopic examination in the earlier course of the case does not demonstrate appreciable changes.

Stengele, Udo. Applications of Optochin in Various External Eye Diseases. (Klinische Monatsblätter für Augenheilkunde, vol. 54, p. 436.)

The twenty cases reported by Stengele are divided into three groups: (1) ocular diseases produced by pneumococci; (2) disease of the tear duct; (3) ocular diseases in which optochin has a special action with regard to photophobia. The optochin was sometimes used in the form of a one per cent solution applied every hour, and sometimes in the form of a five per cent solution instilled after the use of preliminary cocaine. Favorable results were generally recorded, although it is by no means clear in some instances whether the disease would not have been self-terminated without the use of optochin.

The author remarks that the prompt results which he obtained in cases of pneumococcus ulcer of the cornea with a one per cent solution of optochin hydrochloride justify the constant employment of optochin in this condition. He regards the drug as offering a particularly simple means for the use of the general practitioner, who should instill it every one to two hours. The earlier corneal ulcers are treated with optochin, the better the prognosis as regards visual acuity.

Optochin appeared to be of great advantage for such cases of corneal ulcer as also presented disease of the tear sac, and instillation of a one per cent solution in the conjunctival sac, combined with syringing of the tear passages, simplified the treatment materially. In two cases the secretion of the tear sac stopped after syringing of the sac with optochin. This procedure must not, however, be regarded as a substitute for extirpation of the sac, as a permanent cure of dacryocystitis is not to be attained by this method.

The use of optochin in five per cent solution produced a remarkable effect upon photophobia in various external eye diseases, especially in scrofulous ophthalmia. Children who had been unable to open their eyes for days or weeks were enabled to open them freely after a few drops of optochin, and after a short period of treatment the photophobia disappeared permanently. The use of optochin was more or less unsuccessful in cases of phlyctenular eye disease accompanied by eczema of the lid. The author explains the relief from photophobia as due, not to the anesthetic action, but to the bactericidal effect of optochin.

As regards the mode of employment of the drug, he found the instillation of a five per cent solution alone very disagreeable to the patient, but the pain and irritation produced by a solution of this strength were easily avoided by preliminary instillation of a five per cent solution of cocaine. The one per cent solution was tolerated without cocaine. As regards the keeping qualities of optochin solutions, it was found that solutions which were quite fresh, or only a few days old, produced favorable results much more promptly, whereas solutions which were more than three or four weeks old were almost entirely without effect.

Uhthoff, W. Bilateral Symmetric Degeneration of the Cornea with Deposits of Uric Acid and Acid Sodium Urate, with Otherwise Normal Condition of the Eyes and Good General Health. (Klinische Monatsblätter für Augenheilkunde, vol. 54, p. 383.)

The patient, a man of 53 years, had diseased eyes since his twentieth year. An early attack had been doubtfully diagnosed as

mild episcleritis. The condition had frequently recurred during the total period of thirty-three years. The intervals between attacks had at first been of several weeks, but recently the eyes had not been white for a long time. In the last few years a degenerative marginal opacity of the cornea had developed, and at the time of examination in June, 1913, only the central and upper paracentral parts of the cornea remained transparent.

The marginal areas showed a thick, homogeneous, grayish-yellow, non-transparent clouding of the corneal substance, the surface being smooth, and the boundary line between the diseased and healthy cornea fairly sharp. With a strong magnifier there were seen in the opaque tissue extensive glistening, gold-like deposits, whose appearance reminded the examiner of large masses of cholesterin. In September, 1913, a rather large superficial piece of the cornea was excised. Chemical tests showed the deposits to consist of uric acid and crystals of acid sodium urate. The anatomic changes in the tissues are thus described: The epithelial layer was transparent, although its normal stratification was in large part no longer demonstrable. The epithelial cells had partly undergone bleb-like degeneration, forming small cavities in the epithelial layer. Some of the epithelial nuclei were broken down.

Apart from the corneal changes and the related disturbances in the vascularity of the conjunctiva, the eyes appeared to be normal and capable of vision. No sclerotic or episclerotic symptoms had been noted during recent years, and the condition was regarded as a primary degeneration of the cornea. Examination in the medical clinic gave no indication of a gouty diathesis, with the exception of Heberden nodes on the fingers. Uhthoff has been unable to discover the record of any analogous case in the literature. The case was uninfluenced by any of the various therapeutic measures used, including tuberculin, antirheumatics and intravenous injections of thorium-X. The patient returned six months after excision of the corneal tissue. The process had remained practically stationary.

Wessely, K. Experimentally Produced Progressive Chorio-retinal Atrophy and Cataract. (Archiv für Augenheilkunde, Vol. 79, p. 1.)

Fresh sterilized rabbit bile diluted with an equal volume of distilled water was injected in minute quantity into the anterior chambers of two rabbits. Within the first twenty-four hours the cornea became completely opaque. A few days later it was again sufficiently translucent to see that the pupil was completely dilated, and after eight to fourteen days practically nothing of the iris was to be seen. The eyes were enucleated after fourteen and eighteen days, respectively, and showed the following changes:

In one case the whole iris structure had undergone dissolution, and was recognizable only by the presence of flaky or spherical pigment masses. The remains of the iris were covered by a fairly thick new-formed connective tissue, which also covered the lens. The cortex of the lens was cataractous, and the pupillary region of the anterior capsule showed complete absence of epithelium, the capsular epithelium showing, however, marked proliferation at the margin of this defect, and the whole posterior capsule being covered with a new-formed epithelium in several layers. The posterior layers of the cornea were necrotic. The ciliary processes showed slight disintegration.

In the second rabbit, although the method of injection had been exactly the same, the changes were of a decidedly different character. In this animal the action of the bile had been principally on the connective tissue framework of the iris. This, including the greater number of the vessels of the iris, had disappeared, while the pigment layer

had been preserved, so that a pronounced ectropium uveae had developed. In this animal the ciliary processes and lens were uninjured.

In another rabbit the same bile mixture was injected between the layers of the cornea. Fourteen days after the injection the center of the affected area of the cornea sloughed out as though cut with a punch. Anatomic examination of the enucleated eye showed, however, that the membrane of Descemet was retained. On its posterior surface was a thick layer of proliferated endothelial cells, and behind these a layer of leucocytes.

Interesting late changes in the rabbit's eye were observed after injection of minute quantities of a 1 per cent solution of sodium glycocholate or taurocholate into the vitreous. In a number of instances the opacities at first developing in the vitreous and the posterior part of the lens soon cleared up, and in the ensuing months or years it was possible to observe with the ophthalmoscope the following gradual changes: Before the first opacification of the media, the optic nerve was swollen and red. After clearing of the opacity, the nerve was seen in a condition of progressive atrophy, the medullary wings gradually disappearing. The retina showed abundant changes in the nature of a retinitis proliferans; although in a number of instances the retinal atrophy only became noticeable by the greater distinctness of the choroidal vessels. There were sclerotic changes in the choroid and the choriocapillaris had apparently in large measure disappeared.

The microscopic findings conformed to these ophthalmoscopic changes of retinal and choroidal atrophy. In cases in which the ophthalmoscopic picture of retinitis proliferans had been seen, the retina was found in a general condition of advanced atrophy, being in great part transformed into a thin connective tissue layer containing scanty nuclear remains; while here and there the retina was represented by an actively proliferating connective tissue, containing an abundance of blood vessels whose walls showed marked hyaline thickening. After a year or two such eyes showed a considerable formation of bone in the choroid. This bone contained medullary spaces, and there were calcareous deposits in addition to the strictly bony formation.

The late lens changes after the use of small quantities of weak solution of the bile salts were as follows: The first linear or punctate opacities in the posterior cortex cleared up gradually. Much later a typical posterior polar cataract developed, which in some cases advanced to a variety of lens pictures resembling senile cataract. The author remarks that in these cases the condition was undoubtedly one of gradual disturbance of the nutrition of the lens such as is also seen in human beings with progressive chorioretinal atrophy. It is interesting that quite similar pictures to those experimentally produced in the retina, choroid, optic nerve and lens were occasionally to be found spontaneously in very old rabbits.

In two such cases the disc was snow-white, the medullary wings and the retinal vessels had disappeared completely, and the choroid showed the picture of pronounced sclerosis of the vessels. Simultaneously there developed a posterior cataract from which complete cataract gradually formed. The microscopic changes found in these eyes are described in detail.

Ophthalmic Journals

American Journal of Ophthalmology, St. Louis, Mo.
Anales de Oftalmologia, Mexico City, Mexico.
Annales d'Oculistique, Paris, France.
Annali di Ottalmologia, Pavia, Italy.
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